



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE GEOGRAPHICAL WORK OF DR. E. W. HILGARD

Eugene Woldemar Hilgard, Ph.D., LL.D., who was born in Zweibrücken, Germany, on January 5, 1833, and whose death in Berkeley, California, on January 8, 1916, was noticed in the *March Review*, although not usually classed as a geographer, was one of the most noteworthy pioneers in geographical science in America. He was a splendid example of a type of broad-minded men versed in several sciences, common in the nineteenth century but becoming scarce in these days of increasing specialization. He was best known as a soil investigator, but he was also a chemist, geologist, and agronomist, and he had probably a better working knowledge of botany than any one else who has specialized in soils.

Dr. Hilgard spent most of his boyhood in Illinois, attended college in Switzerland and Germany, and did geological work in Spain. After returning to the United States he spent about two years in Washington, D. C., sixteen in Mississippi (most of that time as state geologist), two in Michigan, and nearly half his life in California. In the intervals of other work he also conducted geographical reconnaissances in Louisiana in 1867 and 1869 and in Montana and Washington in 1881-1883. His last visit to the eastern states was in 1891; and in later years his infirmities did not permit him to wander far from his home.

His first contribution to geography was his 415-page "Report on the Geology and Agriculture of the State of Mississippi," printed in 1860 (but not generally distributed until several years later, on account of the Civil War).¹ In that the state was divided into eight geographical divisions, and the geology, soils, vegetation, and agricultural features of each (except the Yazoo Delta) described in an interesting manner, and so accurately that one can find little fault with it even at this day.

The same principles were further elaborated in the reports on cotton production (modestly so called) of the southeastern states and California, in the fifth and sixth volumes of the Tenth Census, published in 1884.² Doctor Hilgard planned and directed the whole work and contributed about sixty pages of introductory matter, three pages on the "General features of the alluvial plain of the Mississippi below the mouth of the Ohio," the reports on Mississippi, Louisiana, and California, and a general agricultural map of the southeastern states which was a remarkable piece of work for that time.³ The other states were assigned by him to the best geographers of each state (most of them state geologists). Agricultural (or rather geographical) maps of each state were printed in colors, and some of these have not been improved upon by any one else in three subsequent decades. The text, although ostensibly dealing primarily with cotton production, covers in considerable detail, for almost every region, such matters as geology, soils, topography, climate, vegetation, crops, proportion of improved land, density of population, ratio of white and negro population, yield of cotton per acre, transportation facilities, etc., with many interesting correlations to delight the geographer.

These cotton production reports, although fairly well known to geologists (probably because five of the six authors were or had been prominently connected with state geological surveys), have apparently been overlooked by most geographers, for several reasons. In the first place, there were few real geographers in this country at the time

¹ See *Amer. Journ. Sci.*, Vol. 82, 1861, pp. 151 and 303; *Tenth Census of the United States*, Vol. 5, 1884, pp. 67 and 201; *Amer. Geologist*, Vol. 27, 1901, pp. 304-305; and *U. S. Geol. Surv. Bull.* 283, pp. 5-6, 1906.

² The one on Louisiana was first issued as a special census bulletin in 1881, as a model for the rest. See *Amer. Journ. Sci.*, Vol. 122, 1881, pp. 245-246.

³ See *Bull. Torrey Botanical Club*, Vol. 37, 1910, p. 418.

they were published, and very few have ever lived in the southeastern states at any subsequent time. Then, one does not ordinarily look in census reports for scientific contributions, and the volumes of the Tenth Census were very cheaply and unattractively bound and the gilt lettering on their backs became almost illegible in a comparatively short time, so that one would easily pass them in a library without noticing them. Finally, the large quarto size of these volumes made them too inconvenient for reference purposes, an opinion expressed more than once by Doctor Hilgard himself.⁴

Hilgard's text-book on soils⁵ embodies the results of the researches of a long and active life and contains much interesting geographical matter.⁵ A list of some of his shorter geographical papers is given below.

Like most of his broad-minded contemporaries, Doctor Hilgard always wrote in plain, simple language, as free as possible from technicalities (other than names of geological formations, fossils, chemical compounds, etc.),⁶ and with faultless grammar. As befits a truly great scientist, he was extremely modest, sincere, and unaffected.

Appreciative notices of Doctor Hilgard's work were published during his lifetime in the Report of the U. S. National Museum for 1904,⁷ the *U. S. Experiment Station Record*,⁸ and the *Bulletin of the Geological Society of America*.⁹ There is a brief sketch of his life in the first number of *Soil Science* (New Brunswick, N. J., 1916), and two longer articles about him in *Science* for March 31, 1916. A more complete biography, with bibliography, will doubtless be published in the near future by some of his geological colleagues. His publications extend over a period of more than sixty years and comprise more than two hundred titles. Besides the books already mentioned, the following pamphlets and serial articles are of interest to geographers, though the titles do not indicate the fact very plainly in every case. The arrangement is chronological.

On the Quaternary Formations of the State of Mississippi. *Amer. Journ. Sci.*, Vol. 91, 1866, pp. 311-325.

On the Geological History of the Gulf of Mexico. *Amer. Journ. Sci.*, Vol. 102, 1871, pp. 391-404.

Supplementary and Final Report of a Geological Reconnaissance of the State of Louisiana, Made under the Auspices of the New Orleans Academy of Sciences and of the Bureau of Immigration of the State of Louisiana, in May and June, 1869. Pamphlet, 44 pp. New Orleans, 1873.

The Later Tertiary of the Gulf of Mexico. *Amer. Journ. Sci.*, Vol. 122, 1881, pp. 58-65, with map.

(With T. C. Jones and R. W. Furnas.) Climate and Agricultural Features and the Agricultural Practice and Needs of the Arid Regions of the Pacific Slope, with Notes on Arizona and New Mexico. 182 pp. Unnumbered report [subsequently designated No. 20], U. S. Department of Agriculture, Washington, 1882. [Not seen; abstract in *Amer. Journ. Sci.*, Vol. 125, 1883, p. 240.]

Soils of the Yakima and Colville Regions [Washington]. *Northern Transcontinental Survey, Agric. Dept., Map Bull. No. 1.* 1 p. of text, 3 maps (folio). New York, 1883.

Agriculture and Late Quaternary Geology [in the upper San Joaquin valley, California]. *Science*, Vol. 11, 1888, May 18, pp. 241-242.

The Lakes of the San Joaquin Valley. 4 pp. *California Exper. Sta. Bull. 82.* 1889.

⁴ See E. A. Smith, *Bull. Geol. Soc. Amer.*, Vol. 25, 1914, pp. 176-177.

⁵ Soils: Their Formation, Properties, Composition, and Relation to Climate and Plant Growth in the Humid and Arid Regions. xxvii and 593 pp. The Macmillan Co., New York, 1907. See reviews in *Science*, Nov. 30, 1906, and *Torrey*, August, 1907.

⁶ See his remarks on this point on pages vii and 207 of his "Report on the Geology and Agriculture of Mississippi," 1860.

⁷ pp. 441, 483, 484, 561, 535, 700.

⁸ Vol. 21, July, 1909. pp. 1-4.

⁹ Vol. 25, 1914, pp. 170-173 and 176-177.

A Report on the Relations of Soil to Climate. 59 pp. *U. S. Weather Bureau Bull.* 1892. Reviewed in *Exper. Sta. Rec.*, Vol. 4, 1892, Oct., pp. 276-282. Partly reprinted, with revisions, in *California Exper. Sta. Rept. for 1893-4*, pp. 100-139.

The Cienagas of Southern California. *Bull. Geol. Soc. Amer.*, Vol. 3, 1892, pp. 124-127; also in *California Exper. Sta. Rept. for 1893-4*, pp. 185-188.

Steppes, Deserts, and Alkali Lands. *Pop. Sci. Monthly*, Vol. 48, 1896, March, pp. 602-616, with a few diagrams and figures.

Origin, Value and Reclamation of Alkali Lands. *U. S. Dept. Agric. Yearbook for 1895*, pp. 103-122, Figs. 3-7, Pl. 2. 1896.

Nature, Value and Utilization of Alkali Lands. 46 pp., 15 figs. *California Exper. Sta. Bull.* 128. 1900.

Why Ancient Civilizations Flourished in Arid Regions. *North American Rev.*, Vol. 175, 1902, pp. 309-315.

The Prairie Mounds of Louisiana. *Science*, N. S., Vol. 21, 1905, Apr. 7, pp. 551-552.

The Exceptional Nature and Genesis of the Mississippi Delta. *Science*, N. S., Vol. 24, 1906, Dec. 28, pp. 861-866.

A New Development in the Mississippi Delta. *Pop. Sci. Monthly*, Vol. 80, 1912, March, pp. 236-245.

ROLAND M. HARPER.